

1983

Annual Status Report

Training and education

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**Multiannual programme
of the Joint Research Centre
1980-83**


1983
Annual Status Report

Training and education

Published by the
COMMISSION OF THE EUROPEAN COMMUNITIES
Directorate-General
Information Market and Innovation
Bâtiment Jean Monnet
LUXEMBOURG

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ISBN 92-825-4255-6
Catalogue number: 

EDUCATION AND TRAINING

1983

Research Staff: 9
Budget: 1.138.000 ECUS

Projects:

Courses or Seminars, as listed in Section 2

Programme Manager:

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1. INTRODUCTION

The Education and Training Programme has been set up in recognition of the growing importance of continuing education in modern technological society. It is designed to improve the dissemination of scientific and technical knowledge, in subjects related to the research activities of the JRC, to the potential European users: industries, public bodies, research and educational organizations, etc.

Owing to the number and the quality of specialists of the various fields covered by the courses who are brought to Ispra as lecturers or participants, this programme plays an important role in the integration of the research teams of the JRC with the European scientific world, and in the development of contacts and ties between European scientists active in a given field.

The Education and Training programme consists both of Courses giving the fundamentals of new or specialized disciplines, and Seminars at research level presenting the state of very rapidly evolving subjects. Though oriented towards applied science and technology, generally their scientific content is at a high level and addressed to persons having a university education and being professionally active in the field.

The lecturing staff consists of both invited experts and JRC staff members.

The courses, intended for external participation, are advertised accordingly in European Countries. A registration fee is requested from participants to cover part of the organization costs.

2. ACHIEVEMENTS

The following Courses or Seminars were organized during 1983:

NUCLEAR SCIENCE AND ENGINEERING

«*Nuclear Materials Safeguards: Techniques, Procedures and Prospects*»:

Course, 8 days

«*Quality Assurance in Nuclear Plants*»:

Workshop, 2 - 2 days

Part A: Installation and Commissioning

Part B: Operation

ENVIRONMENTAL SCIENCE/CHEMISTRY

«*Optical methods for the Remote Sensing of Air Pollution*»:

Course, 4 days

«*Mass Spectrometry of Large Molecules*»:

Course, 5 days

MECHANICAL SCIENCE

«*Elasto-Plastic Fracture Mechanics*»*:

Seminar, 5 days

REMOTE SENSING

«*Synthetic Aperture Radar-Application to Earth Resources Evaluation*»*

Course, 10 days

«*Remote Sensing for Land Use Inventories*»

Summer School, 10 days

HEALTH PHYSICS

«*Response to large Accidental Release of Radioactivity and Other Pollutants*»*

Course, 5 days

«*Protection against Microwaves, Radiofrequency Radiation, Electric and Magnetic Fields*»*

Course, 5 days

FISICA SANITARIA ⁽¹⁾

«*Fondamenti di Radioprotezione*»:

Course, 10 days

«*Radioprotezione negli Impianti Nucleari*»:

Course, 10 days

The majority of these Courses and Seminars, indicated with *, were new, while the other ones were repeats of those held in previous years.

In spite of considerable staffing difficulties, the Remote Sensing Education activity has been enriched this year by a new course: «Synthetic Aperture Radar». The considerable European demand for education and training in this emerging remote sensing technique was covered so far essentially by courses exported by U.S. organizations. The number of registrations, well distributed over all European countries, allows to confirm that this first course responded to an existing need.

In the nuclear field, a new consideration has been given to fissile material safeguards after several years of interruption of our training activity in this area. The course, actually a joint organization with the Directorate for Euratom Safeguards (Luxembourg) and the IAEA-Vienna, was intended as a review in depth of the fundamentals and recent advances in nuclear safeguards principles and techniques, and was aimed at inspectors, researchers and operators. While the two first categories were well represented, the third was practically absent and the course turned out to be a training operation to the benefit of the specialized personnel of the three organizer-Institutions. From this point of view, the course reached its goals.

In the field of structural mechanics, two subject areas considered some years ago in the Ispra Courses programmes have been treated again by two freshly re-designed courses: «Struc-

tural Dynamics» and «Elasto-Plastic Fracture Mechanics». Both were characterized by the considerable number of registrations and the composition of the lecturing staff, which was particularly representative of European expertise in these fields.

Our efforts in the field of environmental science have succeeded this year in two new courses: «Optical Methods for the Remote Sensing of Air Pollution» and «Mass Spectrometry of Large Molecules». While the first belongs to an area never previously tackled in the «Ispra Courses», the second one was the development of the series of courses held in recent years, dealing with the applications of mass spectrometry.

Our series of courses in the field of protection against non-ionizing radiation has been continued this year by a well-attended new course on microwave, radiofrequency radiation and electric and magnetic fields, where it was possible to bring together the experts of three major European bodies active in this field, which officially sponsored the course.

The Course «Response to large Accidental Release of Radioactivity and Other Pollutants» was a new piece of our education programme in health physics, actually dealing with the environmental consequences of accidents in large nuclear and non-nuclear plants. Although an important contribution to the programme came from the Royal Naval College of Greenwich, the JRC-Ispra contributed its expertise deriving from its already long experience in radioprotection, nuclear safety and environmental protection research. This course was also seen as an excellent exercise for the implementation of the future JRC activity in industrial risk assessment and prevention. The response to this first initiative was a success with 32 registrations from nearly all the Western European countries.

The work of publishing the Ispra Courses has progressed satisfactorily: 22 books had been issued at the end of 1983, while 7 were in preparation or being printed. Press reviews on these books are generally positive and the sales are indicative of their usefulness.

3. EVALUATION TO DATE

In spite of the cancellation of 3 programmed course due to insufficiency of registrations, the education activity has maintained in 1983 a level near the average of the recent years, in terms of number of course days (85) and participant x day (2321).

One may infer that even in the present difficult context generated by the economic crisis, which makes the European bodies and firms concerned more reluctant to send their staff abroad for training, the Ispra Courses continue to be seen as a valuable service by the European technical and scientific world.

Balance of 10 years' activity

1983 was the 10th year of the Ispra Courses (the programme started in 1973 but the first courses took place in 1974). On the other hand, as a consequence of the JRC 1984-87 programme decision, Education and Training will no longer be an «objective» of the JRC programme and another management and

(1) Courses held in Italian

resources system will have to be set up. Striking a general balance at this point therefore appears to be opportune.

In 10 years, the Ispra Courses attracted as participants more than 4000 persons, for duration between 3 days and 3 weeks, or more precisely 22.000 participants x days. In the same time, about 800 external experts have been invited to participate in the courses as guest lecturers. These figures are primarily an expression of the response to the Courses in the European scientific, technical, industrial and managerial spheres. They also quantify the benefit to JRC work.

On the other hand, about 200 staff members of the JRC, or the other Commission Directorates, have been associated as lecturers with the Courses at least once, many of them having contributed several times or regularly, and the number of participations as students from the staff is about 1500. These figures confirm that the Courses have made a large appeal to the scientific resources of the JRC, and reciprocally, are a measure of the stimulation received by the JRC from the Courses.

As far as their nature and design are concerned, the Courses have evolved significantly from their early days to the present: conceived initially as a reflection of the JRC research achievements and as a means of dissemination of its results, they have progressively exploited the ability of the JRC, resulting from its «central» position, to appeal to all existing skills in Europe in the fields of its research. Thus they have resulted more and more in an advanced scientific and technical education service, disseminating knowledge and expertise from all over Europe, the JRC acting essentially as the catalyst of this joint enterprise, in addition to its own specific contributions wherever possible.

Another and more recent evolution of the Ispra Courses may be found in the development of a contribution to the training of technical specialists in developing countries. The effort, launched during the 1980-83 plan, did not have time to go beyond the stage of a feasibility test in two specific areas: remote sensing from space and energy management. Its result may be judged successful and encouraging as far as the JRC technical and managerial capacity to build up such a service is concerned.

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CDNA09034ENC

Price (excluding VAT) in Luxembourg

ECU 4.35 BFR 200 IRL 3.20 UKL 2.50 USD 4

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OF THE EUROPEAN COMMUNITIES

L-2985 Luxembourg

ISBN 92-825-4255-6



9 789282 542552